Class Specifications
for the

LAND SURVEYOR SERIES

Series Definition:

This series includes all positions requiring the use of surveying methods, principles and instruments in the measurement of distances, elevations, areas, angles, and related earth surface characteristics, and in recording information disclosed by such surveys, making mathematical calculations, verifying the accuracy of survey data and preparing related sketches, maps, and reports.

Land Surveyors employed by the State Government are found primarily in two functional areas:

1. Construction surveying, in which the surveyor conducts (a) preliminary and location surveys to establish alignments, horizontal and vertical controls, (b) topographical surveys to record existing physical characteristics of the area, (c) triangulation and traverse surveys to locate land boundaries; studies to set land titles and boundaries; preparation of metes and bounds descriptions of lands involved in airport, harbor and highway projects, and (c) construction stakeout survey to establish the lines and grades necessary for the construction projects.

2. Land surveying in which the surveyor (a) conducts surveys to locate and establish boundaries and easements, (b) conducts triangulation surveys to establish accurate horizontal controls, (c) prepares parcel descriptions, and (d) performs other related work for all land owned, controlled, or in the possession of the State for the purpose of using, selling, leasing, exchanging or improving such lands.

Positions in this series require knowledge of survey principles and techniques, mathematics through trigonometry, the use, care and adjustment of survey instruments and equipment, including the transit, level, theodolite and electronic measuring devices, and at the higher levels a knowledge of State land laws, Land Court procedures and decisions, knowledge and understanding

of the land tenure history of the State; and for construction surveying, a knowledge of construction methods and practices. Such knowledge is typically obtained through a combination of intensive on-the-job training and experience, or college or other post-secondary school courses in surveying.

Certain positions, located in programs for the determination of land boundaries and easements and the preparation of maps and descriptions of metes and bounds, are required, as a regular aspect of the work, to perform progressively difficult research on land boundary matters based on a knowledge of land court rules, State land laws, and the State's land tenure history. This work requires the possession of a bachelor's degree in surveying, geodesy, or engineering or an equivalent combination of education and/or experience. Such positions are allocable to the Land Boundary Surveyor series.

The level of difficulty and responsibility of a land surveyor position depends largely upon the following classification factors:

1. Scope and difficulty of the survey projects assigned. This factor requires further explanation for application to levels II and III, as follows:

   Construction surveying positions in the second and third levels in this series have permanently assigned subordinates, serve as chief-of-party in field survey work, and require seasoned judgment in adapting to field conditions such as high speed, heavy traffic areas, and taking measurements involving confining and/or unusual locations; e.g., the top of a pier for the construction of a bridge. The two levels are differentiated primarily by the scope and complexity of the field and office work performed. Office work in surveying involves studying the construction plans, specifications, and maps, correlating the data, determining the accuracy of the data, getting additional information as necessary, performing all the mathematical calculations required to perform the surveys, and determining the survey approach and the most appropriate locations for the construction control points. A simple project will normally involve only several hours or a few days of office preparation prior to performing the required survey work; whereas a complex project will normally involve weeks of studying,

calculating, correlating, etc., in order to perform the survey work properly and to avoid/resolve discrepancies.

2. Nature of Available Guidelines

3. Originality and Judgment Required

4. Nature and Purpose of Personal Contacts Maintained With Others

5. Nature of Supervisory Controls Exercised over the Work

6. Nature and Scope of Recommendations, Decisions, Commitments and Conclusions

7. Nature and Extent of Supervisory Responsibility for the Work of Other Employees

8. Knowledge and Abilities Required

This is an amendment to the class specification for the Land Surveyor Series, approved on November 18, 1968, which is required in order to implement the Civil Service Commission's decision to reinstate the previous classes for certain positions.

DATE APPROVED: 12/23/87 /s/ Diana H. Kaapu
ALFRED C. LARDIZABLAL
Department of Personnel Services

LAND SURVEYOR I 7.550

Duties Summary:

Serves as instrumentman on a variety of kind of surveys such as preliminary, topographic, construction or boundary surveys, using a transit, level, theodolite, and/or other survey instruments; reduces and plots field notes and performs related computations; may serve as chief-of-party on routine surveys; compiles data pertaining to surveys from maps, deeds, land

titles, metes and bounds descriptions or other sources; and performs other related duties as assigned.

Distinguishing Characteristics:

The land surveyor at this level is under the direct supervision of a chief-of-party or other employee of higher level, who indicates the working area, type of survey, degree of accuracy and type of notes required. The supervisor may spot-check work in progress and is usually available to advise on any problems not previously encountered. The work is guided by established procedures which the incumbent adapts as necessary to conditions found in the field. On first or second order triangulation and leveling assignments, where a high degree of accuracy is required, the incumbent is under close supervision, receiving frequent instructions, particularly concerning deviations from normal procedures, and completed work is reviewed in detail for adequacy and accuracy. At this level the land surveyor is expected to be skilled in the use of the usual survey instruments, and to instruct and assist with the supervision of other party members in land survey methods, and the use and care of survey instruments. Person-to-person contacts are both within the organization, and with consultant or contractor personnel and property owners to give and receive factual information.

Examples of Duties:

In a field survey party, operates the transit, theodolite, level and/or other survey instruments to establish alignments for land boundary and center line construction stakeouts, obtains angles and azimuths of traverses, takes elevations for profiles and cross-sections, and sets benchmarks for construction purposes; records field survey notes and makes supplementary sketches; may serve as chief-of-party on routine surveys such as simple boundary, classification, detail location and contour surveys; assists with supervision and training of subordinate engineering aids assigned to the survey party; reduces and plots field notes, plots profiles and cross-sections; adjusts and computes simple triangulations and traverses, and geodetic positions for survey stations; computes angles, distances, closure of traverses, elements of horizontal and vertical curves, grades, and earthwork quantities; prepares simple metes and bounds descriptions; compiles maps, deeds, plans and other data pertinent to the survey project; maintains survey instruments, and adjusts transit and level as needed.

Knowledge and Abilities Required:

Knowledge of: Land survey principles, techniques, practices and terminology; mathematics through trigonometry, as applied to surveying, including traverses, curves, computations of areas, and the use of logarithmic, trigonometric and curve data tables; the proper use and methods of adjusting common survey instruments such as engineering transits and levels; proper use of common drafting and computing tools and equipment.

Ability to: Understand and follow written and oral instructions; operate a transit, level, and other common survey instruments; learn to operate newer or less common instruments such as the goedimeter, and other electronic devices; do lettering and drafting as require for survey work; reduce field notes; prepare sketches, maps and reports; instruct and supervise a small field survey party as assigned.

LAND SURVEYOR II 7.553

Duties Summary:

Serves as chief of a field survey party, with responsibility for directing the activities of 3 to 6 lower-level survey personnel, engaged in performing a variety of types of surveys in accordance with well-established procedures and practices; performs and supervises the performance of related office computations, plotting of field survey notes and land boundaries, preparation of maps, simple metes and bounds descriptions, and reports. Serves as instrumentman under the supervision of a land surveyor of higher level on a survey party performing complex boundary or Land Court surveys, construction surveys of a complex nature, or other surveys requiring a high order of accuracy, or involving unusual or complicating field conditions where deviations from normal procedures are necessary; and performs other related duties as assigned.

Distinguishing Characteristics:

An incumbent of this class works under general supervision of a land surveyor or engineer of higher level. The supervisor specifies areas to be surveyed, discusses any problems anticipated, provides instructions concerning methods to follow and deviations which should be made from standard procedures,

furnishes advice as needed, spot-checks to see that the survey is being accomplished according to plan, and reviews completed work for adequacy and apparent accuracy. Construction survey responsibilities are of average difficulty and do not include complex construction projects such as multi-level interchanges, very high and long bridges, viaducts and tunnels. The incumbent uses judgment and resourcefulness in evaluating ground conditions encountered and adjusting plans accordingly, and in supervising and assuming responsibility for other party members in what are sometimes remote and isolated areas, making decisions involving work priority, safety considerations, disciplinary actions, etc. Guidelines include manuals of surveying principles, methods and techniques, departmental policies and procedures, and Federal Government issuances. Contacts with others are significant at this level, and include contacts with other employees within the organization to exchange factual information, with consultant or contractor personnel, and with property owners and others to gain entrance to lands and secure their cooperation in conducting surveys.

Examples of Duties:

Supervises a field survey party on simple boundary, classification, detail location and contour surveys of government lands, or preliminary, right-of-way and simple to average construction surveys for highways. Makes work assignments, sets the pace for the crew, maintains discipline, and ensures that prescribed survey procedures are followed; makes decisions involving work priority and safety considerations; instructs subordinate personnel in the proper use, adjustment and care of surveying instruments and other tools and equipment; supervises the reduction and plotting of field notes, computation of angles, distances, areas, curves, traverses, grades, closures, and preparation of plans, maps, sketches, reports and records relating to surveys; writes metes and bounds descriptions and checks completed descriptions against calculations for mathematical correctness.

May serve as instrumentman on a survey party performing critical or complex Land Court or boundary surveys or complex construction surveys requiring a high order of accuracy, operates the most precise survey instruments to the required tolerances.

Knowledge and Abilities Required:

In addition to knowledge and abilities required at the next lower level, this level requires:

A thorough knowledge of survey practices, methods and techniques, and of departmental policies and procedures.

Ability to operate precise survey instruments and work to close tolerances; supervise and deal effectively with others.

LAND SURVEYOR III 7.556

Duties Summary:

Performs and supervises the performance of moderately difficult survey work; serves as chief-of-party for major and complex control and boundary survey or multiple, complex construction projects involving unusual or complicating field conditions (e.g., multi-level interchanges, very high and long bridges, viaducts and tunnels), where deviations from normal procedures are necessary; may serve as assistant to the head of a major survey unit, project, or function with technical and supervisory responsibility over lower-level survey personnel; performs special studies and research on land boundary and ownership matters; and performs other related duties as assigned.

Distinguishing Characteristics:

Land surveyors at this level are under the general supervision of a land surveyor or engineer of higher level, who gives assignments in general terms, and may advise on complex problems; the incumbent exercises considerable independence of action, particularly in field situations, in determining methods for accomplishing assignments, supervising the activities of the crew, and making technical decisions such as evaluating ground conditions encountered and changing plans or recommending deviations from standard procedures in the light of those conditions. In construction surveys, exercises independent judgment in studying construction plans and specification requirements and providing proper grades and controls for multiple construction projects. In research and reporting functions, considerable knowledge, judgment and resourcefulness are required in reviewing and evaluating historic documents, and

identifying physical features which may relate to boundary determinations. The records resulting from surveys supervised by incumbent, and research performed by him, often serve as the basis for court actions. Personal work contacts and standard guides are similar to those at the previous level, but the Land Surveyor III exercises more independence and judgment in evaluating the nature of problems encountered and determining the need for deviation from standard procedures.

Examples of Duties:

Serves as assistant to the head of a major survey unit or project, and/or as chief-of-party on difficult and complex control and boundary surveys, where a high order of accuracy is required, or as chief-of-party on multiple, complex construction projects; supervises the work of lower-level land surveyors and engineering aids, making work assignments, giving advice and instructions as needed, and reviewing the work of subordinates for adequacy and accuracy; assists with the training of lower-level personnel in survey methods and in the operation and care of survey instruments and equipment; supervises and performs computations necessary to complete surveys, including adjusting angles in triangulation work, calculating net schemes, areas, coordinates and curves, transposing magnetic surveys to true azimuth surveys, adjusting survey closures, and compiling maps and descriptions from survey notes and other data; performs research and prepares reports on land title and boundary determinations for use by the Court in cases of land litigation.

Knowledge and Abilities Required:

In addition to the knowledge and abilities required at the lower levels, this level requires:

A knowledge of State land laws, Land Court rules and procedures, and knowledge and understanding of the State's land tenure history for land survey work, or, for construction survey work, a knowledge and understanding of construction methods and practices; knowledge of the use, care, adjustment and limitations of the most precise and complex survey instruments; supervisory principles and techniques.

The ability to supervise and deal effectively with others, do research on land matters, and prepare related reports, maps and records.